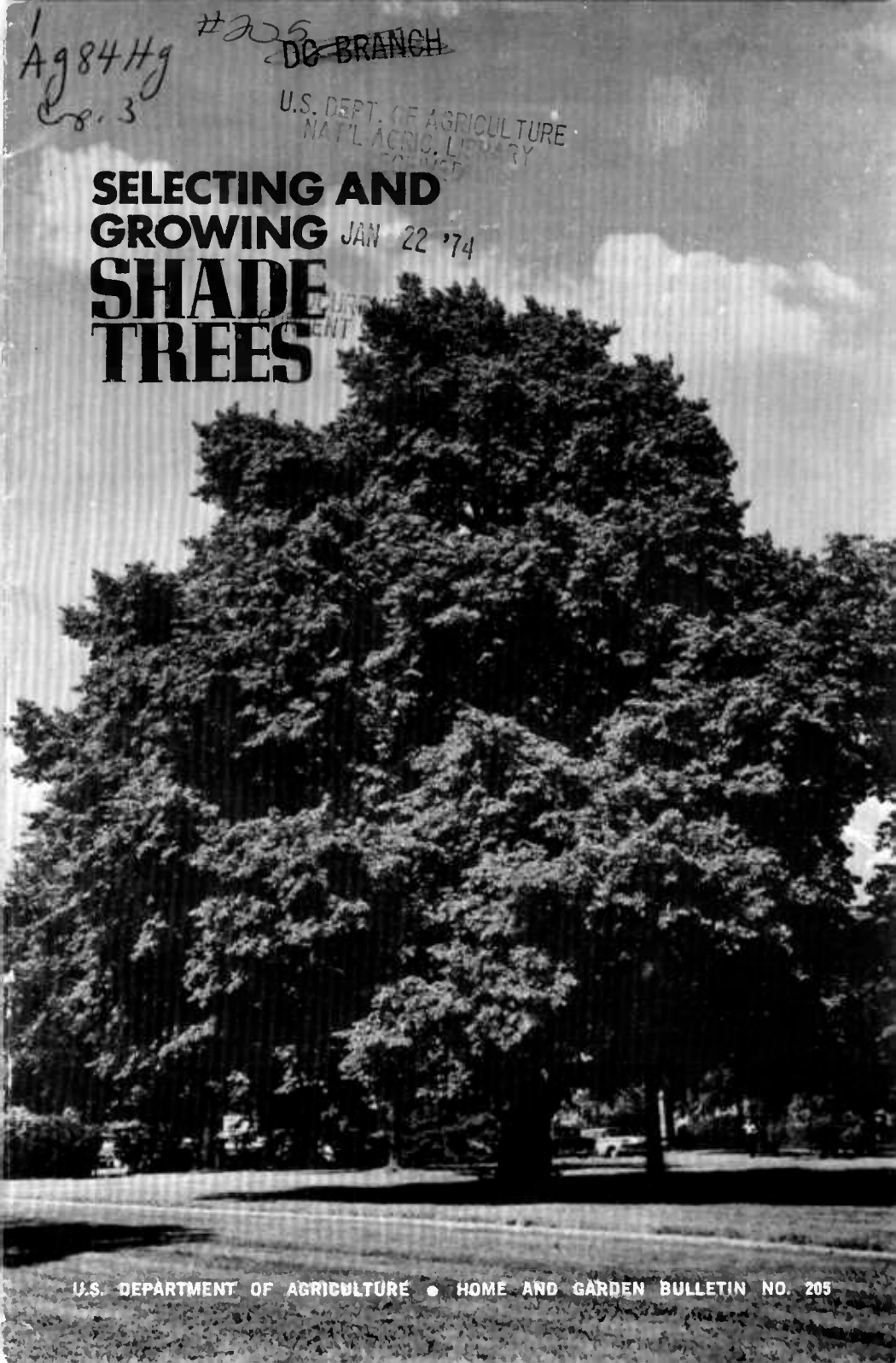
1
Ag84Hg
8.3
#205
DC BRANCH
U.S. DEPT. OF AGRICULTURE
NAT'L AGRIC. LIBRARY
JAN 22 '74

SELECTING AND GROWING SHADE TREES



U.S. DEPARTMENT OF AGRICULTURE • HOME AND GARDEN BULLETIN NO. 205

CONTENTS

	Page
Characteristics of shade trees	1
Selecting shade trees	4
Planting shade trees	5
Care after planting	10
Regional lists of trees	11

USDA, National Agricultural Library
NAL Bldg
10301 Baltimore Blvd
Beltsville, MD 20705-2351

Washington, D.C. Issued December 1973

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402—Price 30 cents
Stock Number 0100–02740

Selecting and Growing Shade Trees

By CURTIS MAY,[1] *Northeastern Region, Agricultural Research Service.*

This publication gives information about shade trees that are suitable for home planting in the continental United States except Alaska. Small ornamental trees such as cherry, crabapple, hawthorn, and dogwood are not included. More specific information about trees that are adapted to your local area can be obtained from State agricultural experiment stations, State universities, county agricultural agents, arboretums, parks, botanic gardens, arborists, and nurserymen.

CHARACTERISTICS OF SHADE TREES

Shade trees may be divided into two main groups—deciduous and evergreen. Deciduous trees produce new leaves in spring. These leaves die and drop at the end of the growing season. Evergreen trees hold their leaves for 1 or more years.

Both deciduous and evergreen trees may be either broadleaf or needle leaf. Broadleaf trees bear leaves that have broadly expanded blades. Maples, oaks, and magnolias are broadleaf trees. Needle-leaf trees have narrow, linear, needle-like leaves. Pine, larch, and spruce are needle-leaf trees.

Some kinds of trees have no leaves but have green twigs that function as leaves. Casuarina is a leafless tree. Scale-leaf trees have flattened, scale-like leaves that lie flat against the twigs. Arborvitae is a scale-leaf tree.

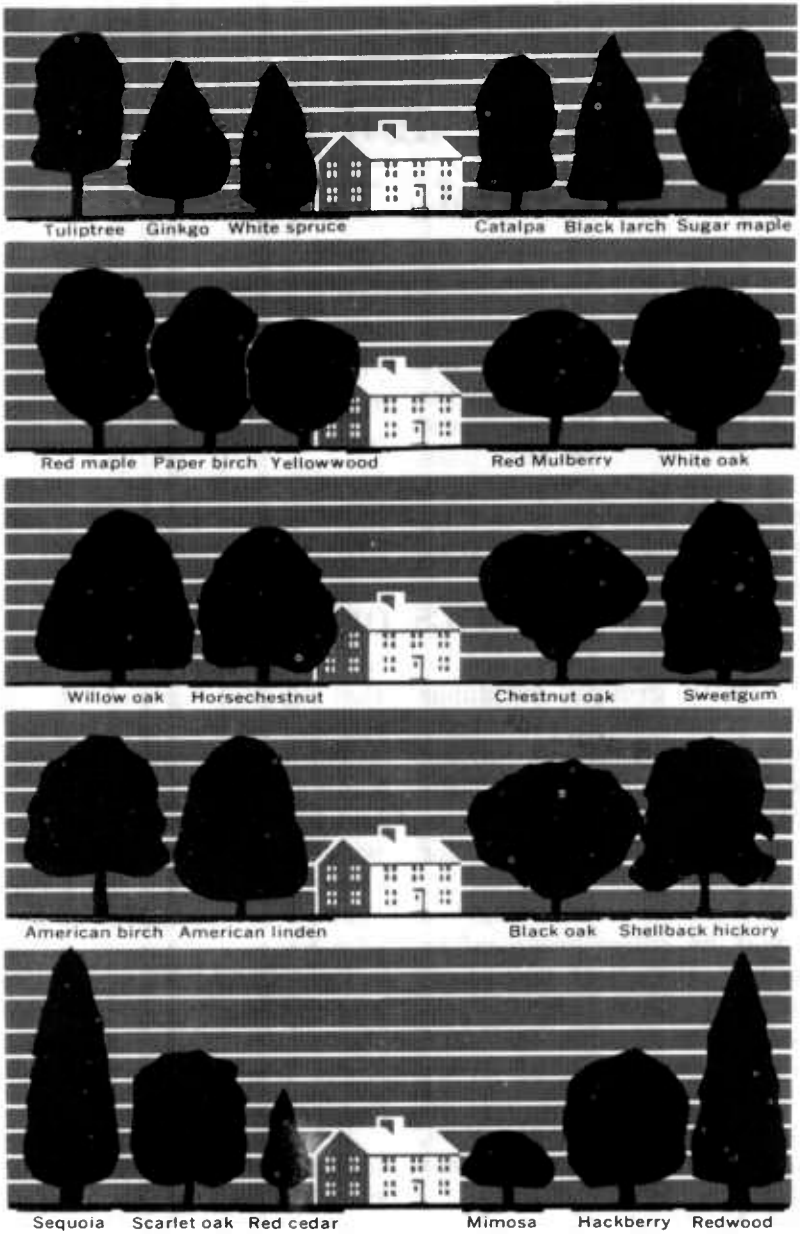
The size and form of different kinds of shade trees vary greatly and individual trees may deviate widely from the standard. The size and form of some common shade trees compared to the size of a house are shown on page 2.

Branching habits also differ among the many species. Some of the general branching habits of shade trees are shown on page 3.

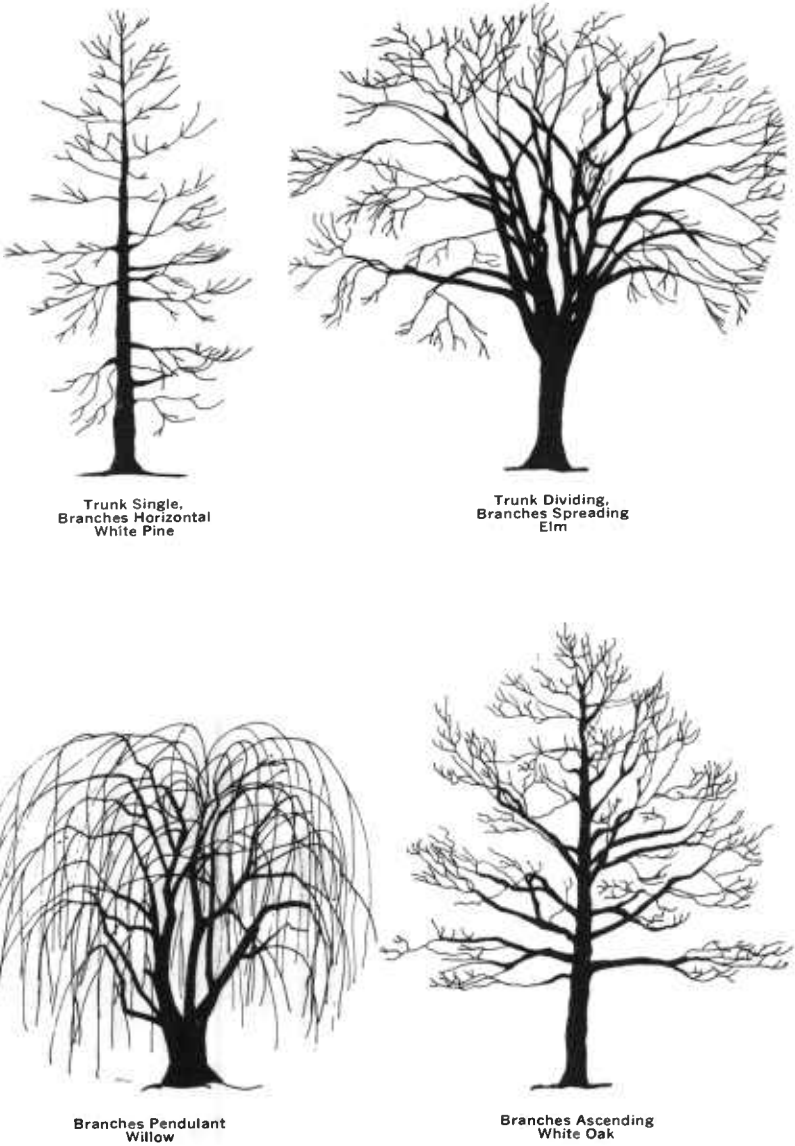
Deciduous trees generally grow faster than evergreens, but the growth rate varies among all kinds of trees. Also, the rate of growth depends on soil fertility, rainfall, and temperature.

The life of shade trees varies with species, climate, and soil. In densely populated cities, and es-

[1] Retired.



Size of mature shade trees in relation to the height of a 2-story house. Each horizontal line represents 10 feet.



Branching habits of trees.

pecially in some industrial areas, the life of many trees is much less than in suburban or rural areas. Diseases, insects, improper care, and air pollution also can shorten the life of shade trees.

SELECTING SHADE TREES

Cold hardiness is the primary requirement to consider when you select a shade tree. The coldest area (plant hardiness zone) in which each species will normally succeed is given in the regional lists of trees, page 11.

Some species are intolerant of high temperatures. Heat and drought resistance usually are linked. By watering, however, you can grow some species in hot, dry climates where they would not otherwise survive. In areas of low rainfall, drought resistant species require less care than trees that must be watered.

You should consider the rate of growth of different kinds of trees. In general, trees that grow rapidly have weak wood that is easily damaged by storms and decay. Slower-growing trees have stronger wood. However, if you want quick shade, the use of fast-growing trees may be desirable.

Also consider the size and shape of trees at muturity. A tree 35 feet tall at maturity is acceptable on the average city lot with a one-story house, but a tree 50 to 100 feet high would be too tall. However, large trees may be suitable for large yards.

This publication does not specify where you should plant shade trees, but a few suggestions may help you avoid certain problems. Roots of elms, willows, poplars, and maples, for example, can clog sewers. You should not plant these trees near drainage pipes.

Avoid planting trees beneath telephone and power lines. Trees that grow over the roof of a house can fill the gutters with leaves, but these trees also shade the house from the hot summer sun.

In general, you should not select a young tree with a divided lower trunk because it might split.

Some trees such as horsechestnut produce hard, poisonous fruits. The thorny fruits of sweetgum and some other trees can be

BN37433

The trunk of a young red maple that has poor form. The divided trunk may split.

a nuisance in lawns. Fruits of ginkgo smell bad when they decay. Plant only male ginkgo to avoid producing smelly fruits.

Trees such as Siberian elm, poplar, red maple, and mimosa produce abundant fruits, seeds, and seedlings that can become a nuisance in lawns and gardens. Some trees such as the black locust sprout from the roots and the sprouts often interfere with lawn mowing. One species of eucalyptus harbors rats in its old foliage. Dry foliage hanging on the trunks of palm trees can be a fire hazard.

It is difficult to find a species with no faults. Balance the faults of trees against their good qualities in deciding what kind to plant.

PLANTING SHADE TREES

You can obtain shade trees with the soil held around their roots by burlap, wire, or plastic. They are known as balled and burlapped trees. Trees that are sold in containers are commonly known as container-grown trees and those without soil on the roots are called bare-rooted trees.

The chances of survival usually are high for balled and burlapped and container-grown trees. Balled and burlapped trees should have a root-ball of 1 foot in diameter for each inch of diameter of the tree trunk.

Nursery-grown trees are more likely to survive than trees dug from the woods. Root systems of nursery-grown trees usually are compact and less likely to be injured seriously when they are dug. Many arborists, nurserymen, and landscape contractors guarantee their trees for at least 1 year after they plant them.

Trees with a trunk diameter of 1.5 to 3 inches may be planted with bare roots. Larger trees should be balled and burlapped and transplanted, disturbing the roots as little as possible. Generally, as trees get larger, they cost more to buy and transplant. Get a professional tree mover to move large trees.

Planting Seasons

The most favorable planting season for shade trees varies with the region, kind of tree, soil, source of planting stock, and method of handling. The method of handling is the way that trees are grown, dug, stored, and transported.

Deciduous trees

In general, you should plant bare-rooted, deciduous trees in autumn after their leaves change color and before the ground freezes; or you can plant them in late winter or early spring after the ground has thawed, but before buds start to grow.

Spring is considered the best time to plant in areas where the ground freezes deeply, where strong winds prevail, or where soil moisture is deficient. The drying effects of strong winds can

be reduced if you water the trees and wrap their trunks and larger limbs with burlap or special protective paper.

Evergreen trees

In cold regions, needle-leaf evergreens such as pine, spruce, juniper, and arborvitae usually are planted early in the fall or in spring after the ground has thawed. However, you may plant needle-leaf evergreens that are balled and burlapped or in containers anytime the ground in cold regions is workable, but you must mulch and water them after planting.

In warm regions, you may plant needle-leaf evergreens anytime if you water them regularly after planting. Small needle-leaf evergreens will live in warm regions if planted bare rooted but large ones will survive better if they are balled and burlapped.

Spring is the best season to plant such broadleaf evergreens as magnolia and holly; you can plant them in autumn if you allow time for the roots to grow before the ground freezes.

The best time to plant palms is during warm, wet months but you can plant them anytime if you keep them watered after planting.

Temporary Storage

Trees should be planted as soon as possible after they are dug. If you must hold them for several days, keep the roots moist. Roots die if they dry out.

Sprinkle the roots of balled and burlapped trees as often as needed to keep the soil from drying. Sprinkle the tops on windy or hot days. You may cover the tops and roots of balled and burlapped trees with plastic or canvas, or with plastic over wet burlap. Do not let the roots dry out.

Bare-rooted trees that cannot be planted immediately after they are delivered may be heeled-in. To heel-in a tree, dig a trench with one sloping side. Spread the roots in the trench with the trunk resting against the sloping side. Then cover the roots with soil or a loose, moist mulch of straw, peat moss, or similar material. Keep the mulch moist until the trees are planted. Protect the tops of heeled-in trees as much as possible from drying winds. Locate the heeling-in bed in a shady place if possible.

Spacing

Plant shade trees as far apart as their mature limb spread is expected to be so they can develop fully without crowding each other. You should plant most trees at least 30 feet from a house. On narrow streets and in congested areas, use trees that are relatively small at maturity.

Preparing the Planting Hole

Dig the planting hole for bare-rooted trees wide enough to spread the roots in their natural position. Do not double back the roots. The planting hole for a balled and burlapped or container-grown tree should be about 2 feet wider than the diameter

STEPS IN PLANTING

The steps in planting shade trees follow:

- Select the tree and decide when and where to plant it.
- Protect the roots from drying.
- Dig a hole large enough to hold the entire root system.
- Make certain that drainage from the hole is good.
- Prune the top of the tree as needed to compensate for roots lost in digging and moving.
- Put some fertile soil in the hole.
- Set the tree in the hole no deeper than it was at its original site.
- Install supporting stakes.
- Cover the roots with fertile soil, tamping it or settling it with water.
- Wrap the trunk and large limbs with a protective covering such as burlap or paper.
- Install guy wires.
- Care for the tree after planting.

of the rootball or container so fertile soil can be put around the roots.

The hole should be deep enough for the tree to be planted as deep as it was originally. However, if the soil is poorly drained, the hole should be at least 4 inches deep so a drainage system can be installed.

Planting holes must be well drained for most trees to grow satisfactorily. Most trees will not grow well and some will not survive if you plant them where water stands for even a short time. You can provide drainage by putting one or two lines of 3- or 4-inch tile and a layer of gravel or crushed rock in the bottom of the hole. For holes 5 to 6 feet across, one line of tile usually is sufficient. For holes more than 6 feet across, at least two lines of tile are recommended.

Slope the bottom of the planting hole so that excess water will run to the side. Place the tile across the bottom of the hole and extend it beyond the hole to a free outlet. If the ground is level, the outlet may be a dry well filled with gravel or a storm sewer. If the ground is sloping, the tile may be extended from the bottom of the planting hole to the surface of the ground farther down the slope. Never connect the tile to a sanitary sewer because tree roots can grow into sanitary sewers and clog them.

After you lay the tile, carefully spread enough gravel or crushed rock over the bottom of the hole to hold the tile in place and cover it. Put glass cloth or roofing paper over the tile to help keep soil out of the drainage system. Then spread 2 to 3 inches of fertile soil over the cloth or paper.

If the soil is low in fertility, mix fertilizer with the soil. Well decayed leaf mold, steamed bonemeal, or similar organic material may be used. For trees 6 to 10 feet tall, mix about one-half pound of 5–10–5, 4–12–4, or a

similar complete fertilizer with each 4 bushels of filling soil. The fertilizer will help stimulate early growth.

Most shade trees tolerate a considerable range of soil acidity but for best growth, some require an acid soil, some a nearly neutral soil, and some an alkaline soil. Usually, county agricultural agents, State agricultural experiment stations, or State agricultural colleges will test soil to determine acidity and the need for fertilizer. Some States charge a fee for the service.

Setting the Tree

A tree with a trunk 6 inches or more in diameter should be set with the trunk facing the same direction it was in at its original site. You may plant smaller trees without regard to orientation.

When you plant a tree with bare roots, hold it in place while you adjust the roots to their natural position in the hole and cover them with soil. If you removed fertile loam from the hole, use it to cover the roots. Loam usually is sufficiently permeable to air and water for good growth of shade trees.

Heavy clay soil has poor permeability. You can make it more permeable by mixing it with as much sand as necessary to obtain good percolation of water. You can make sandy soil less permeable by mixing it with loam, clay, and organic material such as peat moss. Do not use fresh manure or fresh green plant material in the planting hole because when these materials decay they release compounds that are toxic to tree roots.

Work the soil around the roots and pack it with a blunt tool. Gently sway and shake small trees in all directions to settle the soil around the roots and to eliminate air pockets. Continue to tamp and pack the soil as you add it. When the roots are covered, tamp the soil so that it is settled firmly around the roots. Do not tamp wet soil.

Before you fill the hole completely, add water to settle the soil. When the water has soaked into the soil, add enough soil to complete the backfill. Do not pack this soil. Then put a ridge of soil around the rim to form a low basin to hold water over the root area.

Set balled and burlapped trees in the hole with the burlap around the rootball. If the hole is too deep, lift small trees and add soil to raise the ball to the proper level. If the tree is too heavy to lift, rock it back and forth in all directions and ram soil beneath the ball until it is at the proper height. Loosen the burlap and drop it from the side of the ball. Burlap does not have to be removed from beneath the ball.

A hard crust sometimes forms on the surface of the ball. Break the crust before filling the planting hole. Pack the filling soil as it is added. Settle it with water the same as for bare-rooted trees.

If the tree is in a container, cut away the sides of the con-

BN37434

Watering a newly planted tree. The ridge around the tree forms a well to hold water until it soaks into the soil.

tainer with metal shears and remove the rootball carefully. After you remove the tree from the container, plant it the same way you plant a balled and burlapped tree.

Newly planted trees usually need support to hold them in position and to keep the roots from loosening and the crowns from breaking. Unsupported trees often lean permanently away from prevailing winds. To prevent this, install bracing stakes before you cover the roots.

One to three wooden stakes usually will support trees that have a trunk diameter of no more than 2 inches. The wooden stakes should be 6 to 9 feet long and 2 to 2½ inches square. The stakes should be strong enough to hold the trunk rigidly in place.

Set the stakes 3 to 18 inches from the trunk before you fill the planting hole. Fasten the trunk to the stakes with canvas tape or loops of wire passed through a section of rubber or plastic hose or similar material. Bare wire will scrape or cut the bark.

A tree with a trunk diameter of more than 2 inches usually needs three guy wires to hold it securely in place. Fix the guy wires so they can be tightened as needed. Fasten one wire to a stake driven securely in the ground on the side of the tree that is against the prevailing winds. Fasten the other two wires to stakes driven into the ground so that all three stakes form an equilateral triangle.

The stakes should slope away from the tree at approximately a right angle to the slope of the guy

wires. You may use a heavy log or beam (deadman) instead of a stake to anchor the guy wires. Fasten the guy wires about two-thirds of the way up the trunk of the tree. Remove the stakes and wires as soon as the tree roots are firmly established in the ground, usually in about a year.

CARE AFTER PLANTING

Water trees as needed during the first and second growing seasons after you plant them. Watering thoroughly once a week is better than light daily watering. Do not saturate the soil so much that you can squeeze water from it by hand.

Frequent light misting of the tops of newly planted evergreens in early morning or late afternoon will help the leaves. Evergreens planted in autumn should be watered frequently to provide them with plenty of soil moisture before the ground freezes.

To protect the trunk of a newly planted deciduous tree from drying and from pests, wrap it spirally with strips of burlap or specially prepared paper. You can use strips of kraft paper but special crepe paper is easier to handle. Some wraps are treated to increase protection against trunk-boring insects.

Overlap each turn of paper one-half the width of the strip. Reinforce the wrapping with stout cord wrapped spirally in the direction opposite to that of the paper. Tie the cord at intervals as necessary to hold the paper in place. Leave the wrap on the trunk for 2 years. If it rots away sooner, replace it.

Trunks of evergreens seldom need wrapping.

When you plant trees in the fall, mulch them when you plant them. When you plant trees in the spring, mulch them after the soil has warmed. Place the mulch over the entire root area and leave it until it decays. Use 2 to 3 inches of peat moss, leaf mold, pine needles, straw, or similar material.

Trees planted with bare roots usually have some roots missing. To compensate for the loss of roots, prune out about one-third of the top. New roots usually will grow within a few weeks and restore normal water absorption. Balled and burlapped and container-grown trees usually need no pruning when planted. Pruning is not necessary in humid areas.

After trees are established, you should prune them to shape them and to remove dead, diseased, or mutilated parts. Reduce top growth by pruning whole branches, if possible, unless the tree has few branches and would be mutilated if whole branches were removed. Cut close to the trunk or a branch fork so that you do not leave short stubs. Do not prune the central leader of trees that normally have only one. If the central leader of these trees is removed, they will be dis-

figured and a new leader will not grow for many years.

Diseases, insects, animals, and lawn mowers or other tools may damage trees. Use an antiseptic tree wound paint on wounds 1½ inches or more in diameter. County agricultural agents and State agricultural experiment stations can provide information on the control of diseases and insects.

The wrapping on trunks of newly planted trees may give some protection against rodents and dogs. Stakes and guy wires around trees will help reduce damage by lawnmowers and other small mechanical devices. Sometimes a fence may be necessary to protect a small tree.

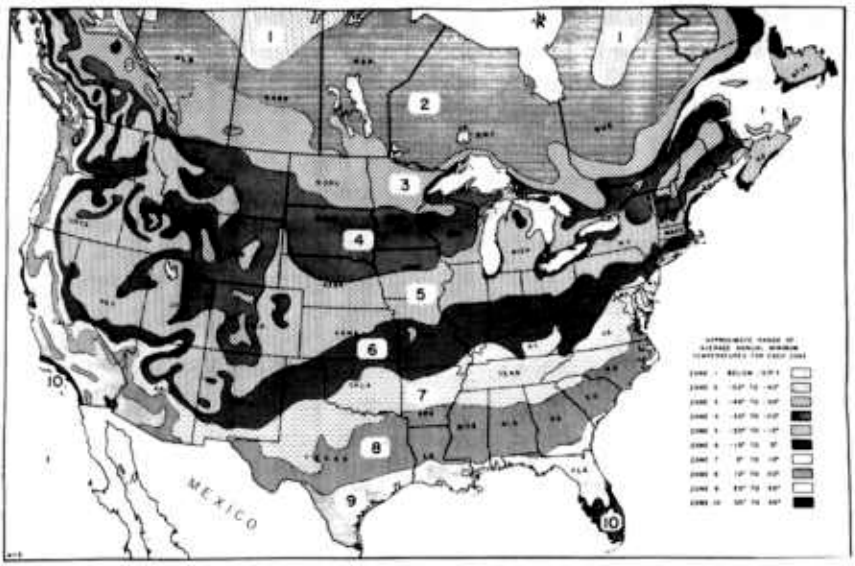
REGIONAL LISTS OF TREES

In this publication, the continental United States is divided into nine regions for convenience in providing lists of shade trees suitable for areas that have different climates. Overlapping the nine regions are the plant hardiness zones. The regions are shown on the map on page 11 and the plant hardiness zones are shown on the map on page 12.

The regions are based roughly on climate, but within each region, there is a wide range of temperature, rainfall, soil, and other factors. All of these affect plant growth.

To some extent, you can control soil and water requirements of shade trees but temperature usually is beyond control. If you are not sure about the cold hardi-

Regional map.



BN6914

Plant hardiness zone map.

ness of a tree, you can get information about it from agricultural experiment stations, colleges of agriculture, county agricultural agents, nurserymen, arborists, botanic gardens, and arboretums.

In selecting a shade tree, first check the maps for the region and plant hardiness zone in which the tree will be planted. Next check the appropriate regional list for trees that will grow in that region and plant hardiness zone or warmer zone. Then select a tree that is suitable for you from the list.

In the regional lists, the common names of the trees are listed alphabetically under the following headings: Evergreens, broadleaf; Evergreens, needle leaf and scale leaf; Deciduous; Palms; and Leafless. When a tree is known by more than one common name, the less common name is shown in parenthesis after the more common one.

The lists do not include all the kinds of shade trees that may be grown in a region. Regional lists usually are available from State agricultural experiment stations and departments of horticulture at State universities or colleges.

REGION 1

Evergreens, broadleaf

Holly, American; Zone 6.

Magnolia, Southern; Zone 7.

Evergreens, needle leaf and scale leaf

Arborvitae, Eastern; Zone 2.

Arborvitae, Japanese; Zone 6.

Cedar, Deodar; Zone 7.

Cedar, Eastern Red (Juniper); Zone 2.

Cedar of Lebanon; Zone 6.
Cryptomeria; Zone 6.
Fir, White; Zone 5.
Hemlock, Canadian; Zone 3.
Lawson False Cypress; Zone 6.
Pine, Eastern White; Zone 3.
Pine, Red; Zone 2.
Spruce, Colorado Blue; Zone 2.
Spruce, White; Zone 2.

Deciduous

Ash, Green; Zone 2.
Ash, White; Zone 3.
Aspen, Quaking; Zone 2.
Baldcypress; Zone 5.
Beech, American; Zone 3.
Beech, European; Zone 5.
Birch, Cutleaf European; Zone 2.
Birch, Paper; Zone 2.
Birch, White; Zone 2.
Buckeye; Zone 4.
Catalpa, Northern; Zone 3.
Catalpa, Southern; Zone 5.
Cork Tree, Phelledendron Amur; Zone 4.
Cucumber Tree (Magnolia, Cucumber); Zone 5.
Elm, American; Zone 3.
Elm, English; Zone 6.
Elm, European; Zone 5.
Elm, Scotch; Zone 5.
Ginkgo; Zone 5.
Goldenrain Tree; Zone 5.
Hackberry, Eastern; Zone 3.
Hickory, Bitternut; Zone 5.
Hickory, Mockernut; Zone 5.
Hickory, Pignut (Pignut); Zone 5.
Hickory, Shagbark; Zone 5.
Honeylocust, Thornless; Zone 3.
Hornbeam, American; Zone 3.

BN37438

English Elm.

Hornbeam, European; Zone 6.
Hornbeam, Hop; Zone 5.
Horsechestnut; Zone 3.
Horsechestnut, Red (Buckeye, Red and Horsechestnut, Ruby); Zone 3.
Japanese Pagoda Tree; Zone 5.
Katsura Tree; Zone 5.
Kentucky Coffeetree; Zone 5.
Larch, European; Zone 3.
Linden, American; Zone 3.
Linden, Littleleaf; Zone 3.
Linden, Silver; Zone 5.
Locust, Black; Zone 3.
London Plane; Zone 6.
Magnolia, Sweetbay; Zone 7.
Maple, Norway; Zone 4.
Maple, Red; Zone 3.
Maple, Sugar; Zone 3.
Maple, Sycamore; Zone 6.
Mimosa; Zone 7.
Oak, Black; Zone 5.
Oak, Bur; Zone 3.
Oak, Chestnut; Zone 5.
Oak, Northern Red; Zone 4.
Oak, Pin; Zone 4.

Oak, Scarlet; Zone 4.
Oak, Shingle; Zone 6.
Oak, Turkey; Zone 6.
Oak, White; Zone 5.
Oak, Willow; Zone 6.
Oak, Yellow; Zone 5.
Pear, Bradford; Zone 5.
Sassafras; Zone 5.
Silverbell; Zone 5.
Sourgum; Zone 5.
Sweetgum; Zone 5.
Sycamore; Zone 5.
Tamarack; Zone 2.
Tulip Poplar; Zone 5.
Willow, Weeping; Zone 6.
Yellowwood; Zone 4.
Zelkova; Zone 5.

REGION 2

Evergreens, broadleaf

Bayberry; Zone 7.
Camphor Tree; Zone 9.
Holly, American; Zone 6.
Holly, Chinese; Zone 7.
Holly, English; Zone 7.
Laurelcherry; Zone 7.
Magnolia, Southern; Zone 7.
Oak, Laurel; Zone 9.
Oak, Live; Zone 8.
Wax Myrtle; Zone 9.

Evergreens, needle leaf and scale leaf

Arborvitae, Eastern; Zone 2.
Arborvitae, Oriental; Zone 3.
Cedar, Atlas; Zone 6.
Cedar, Deodar; Zone 7.
Cedar, Eastern Red; Zone 2.
Cedar, Incense; Zone 6.
Cedar of Lebanon; Zone 6.
Cryptomeria; Zone 6.
Hemlock, Carolina; Zone 7.
Pine, Eastern White; Zone 3.
Pine, Loblolly; Zone 7.
Pine, Longleaf; Zone 8.
Pine, Shortleaf; Zone 7.
Pine, Slash; Zone 8.
Spruce, Colorado Blue; Zone 2.
Spruce, Red; Zone 7.

Deciduous

Ash, White; Zone 3.
Baldcypress; Zone 5.
Beech, American; Zone 3.
Beech, European; Zone 5.
Birch, Cutleaf European; Zone 2.
Buckeye; Zone 4.
Catalpa, Northern; Zone 3.
Catalpa, Southern; Zone 5.
Cherry, Black; Zone 3.
Chinaberry (Umbrella Tree); Zone 7.
Chinese Tallow Tree; Zone 7.
Crape Myrtle; Zone 7.
Cucumber Tree (Magnolia, Cucumber); Zone 5.
Elm, American; Zone 3.
Elm, Cedar; Zone 7.
Elm, English; Zone 5.
Elm, Winged; Zone 7.
Ginkgo; Zone 5.
Goldenrain Tree; Zone 5.
Hackberry, Eastern; Zone 3.
Hickory, Bitternut; Zone 5.
Hickory, Mockernut; Zone 5.
Hickory, Pignut (Pignut); Zone 5.
Hickory, Shagbark; Zone 5.
Honeylocust, Thornless; Zone 3.
Hornbeam, American; Zone 3.
Hornbeam, Hop; Zone 5.
Japanese Pagoda Tree; Zone 5.
Katsura Tree; Zone 5.

Kentucky Coffeetree; Zone 5.
Linden, American; Zone 3.
Linden, Littleleaf; Zone 3.
London Plane; Zone 6.
Magnolia, Sweetbay; Zone 7.
Maple, Norway; Zone 4.
Maple, Red; Zone 3.
Maple, Silver; Zone 3.
Maple, Sycamore; Zone 6.
Mimosa; Zone 7.
Mulberry, Paper; Zone 6.
Oak, Black; Zone 5.
Oak, Bur; Zone 3.
Oak, Chestnut; Zone 5.
Oak, Pin; Zone 4.
Oak, Post; Zone 7.
Oak, Scarlet; Zone 4.
Oak, Southern Red; Zone 7.
Oak, Water; Zone 8.
Oak, White; Zone 5.
Oak, Willow; Zone 6.
Pear, Bradford; Zone 5.
Pecan; Zone 7.
Persimmon; Zone 7.
Redbud, Eastern; Zone 6.
Sassafras; Zone 5.
Silverbell; Zone 5.
Sourgum; Zone 5.
Sourwood; Zone 7.
Sweetgum; Zone 5.
Sycamore; Zone 5.
Tulip Poplar; Zone 5.
Yellowwood; Zone 4.

Palms

Palmetto, Cabbage; Zone 8.

REGION 3

Evergreens, broadleaf

African Tuliptree (Bell Flambeau); Zone 10.
Brazilian Pepper; Zone 9.
Cajeput; Zone 10.
Cocoplum; Zone 10.
Fig, Fiddle Leaf; Zone 10.
Fig, India Laurel; Zone 10.
Fig, Lofty; Zone 10.
Geiger Tree; Zone 10.
Holly, American; Zone 6.
Holly, Chinese; Zone 7.
Indian Rubber Tree; Zone 10.
Jacaranda; Zone 9.
Laurelcherry; Zone 7.
Magnolia, Southern; Zone 7.
Mahogany, West Indies (Mahogany, Swamp); Zone 10.
Oak, Laurel; Zone 9.
Oak, Live; Zone 8.
Oxhorn Bucida; Zone 10.
Pigeon Plum; Zone 10.
Silk Oak; Zone 10.
Silver Trumpet; Zone 10.
Wax Myrtle; Zone 9.

Evergreens, needle leaf and scale leaf

Pine, Longleaf; Zone 8.
Pine, Slash; Zone 8.
Pine, Spruce; Zone 9.

Deciduous

Baldcypress; Zone 5.
Bo Tree; Zone 10.
Crape Myrtle; Zone 7.
Cucumber Tree (Magnolia, Cucumber); Zone 5.
Fig, Benjamin; Zone 10.
Goldenrain Tree; Zone 5.
Linden, American; Zone 3.
Maple, Red; Zone 3.
Mimosa; Zone 7.
Mimosa, Lebbek; Zone 9.
Oak, Water; Zone 8.
Orchid Tree; Zone 9.
Pecan; Zone 7.
Redbud, Eastern; Zone 6.
Royal Poinciana; Zone 9.
Sweetgum; Zone 5.

Palms

Palm, Coconut; Zone 10.
Palm, Cuban Royal; Zone 10.
Palm, Fishtail; Zone 10.

Palm, Florida Royal; Zone 10.
Palm, Manilla; Zone 10.
Palm, Washington (Palm, Mexican Fan); Zone 9.
Palmetto, Cabbage; Zone 8.

Leafless

Casuarina (Beefwood, Horsetail); Zone 10.
Cunningham Beefwood; Zone 10.
Scaly Bark Beefwood; Zone 9.

REGION 4

Evergreens, broadleaf

None

Evergreens, needle leaf and scale leaf

Arborvitae, Eastern; Zone 2.
Arborvitae, Oriental; Zone 3.
Cedar, Eastern Red (Juniper); Zone 2.
Cedar, Incense; Zone 6.
Douglas Fur; Zone 3.
Hemlock, Canadian; Zone 3.
Juniper, Rocky Mountain; Zone 3.

BN37439

Douglas Fir.

Pine, Austrian; Zone 3.
Pine, Ponderosa; Zone 3.
Pine, Scotch; Zone 3.
Spruce, Colorado Blue; Zone 2.
Spruce, White; Zone 2.

Deciduous

Ash, Black; Zone 3.
Ash, Green; Zone 2.
Ash, White; Zone 3.
Birch, Cutleaf European; Zone 2.
Birch, Paper; Zone 2.
Birch, White; Zone 2.
Catalpa, Northern; Zone 3.
Cherry, Black; Zone 3.
Cottonwood, Plains (Poplar, Plains); Zone 3.
Elm, American; Zone 3.
Elm, Siberian; Zone 3.
Hackberry, Eastern; Zone 3.
Hackberry, Western (Sugarberry); Zone 5.
Honeylocust, Thornless; Zone 3.
Katsura Tree; Zone 5.
Larch, Siberian; Zone 3.
Linden, American; Zone 3.
Linden, Littleleaf; Zone 3.
Maple, Silver; Zone 3.
Oak, Bur; Zone 3.
Oak, Northern Red; Zone 4.
Oak, Pin; Zone 4.
Oak, Scarlet; Zone 4.
Zelkova; Zone 5.

REGION 5

Evergreens, broadleaf

Oak, Live; Zone 8.

Evergreens, needle leaf and scale leaf

Arborvitae, Oriental; Zone 3.
Cedar, Atlas; Zone 6.

BN37444

Pin Oak.

Cedar, Eastern Red (Juniper); Zone 2.
Cryptomeria; Zone 6.
Cypress, Arizona; Zone 7.
Juniper, Rocky Mountain; Zone 3.
Pine, Austrian; Zone 3.
Pine, Loblolly; Zone 7.
Pine, Ponderosa; Zone 3.
Spruce, Colorado Blue; Zone 2.

Deciduous

Ash, Green; Zone 2.
Baldcypress; Zone 5.
Beech, European; Zone 5.
Buckeye; Zone 4.
Catalpa, Northern; Zone 3.
Catalpa, Southern; Zone 5.
Chinaberry (Umbrella Tree); Zone 7.
Desert Willow; Zone 7.
Elm, American; Zone 3.
Elm, Chinese; Zone 5.
Elm, English; Zone 6.
Elm, European; Zone 5.
Elm, Siberian; Zone 3.
Goldenrain Tree; Zone 5.
Hackberry, Eastern; Zone 3.
Hackberry, Western (Sugarberry); Zone 5.
Honeylocust, Thornless; Zone 3.
Huisache; Zone 9.
Japanese Pagoda Tree; Zone 5.
Katsura; Zone 5.
Kentucky Coffeetree; Zone 5.
Maple, Silver; Zone 3.
Maple, Sycamore; Zone 6.
Mesquite; Zone 9.
Mulberry, Paper; Zone 6.
Mulberry, Russian; Zone 5.
Oak, Bur; Zone 3.
Oak, Chestnut; Zone 5.
Oak, Pin; Zone 4.
Oak, Post; Zone 7.
Oak, Scarlet; Zone 4.
Oak, Spanish; Zone 8.
Oak, Texas (Oak, Shumard); Zone 5.
Oak, Yellow; Zone 5.
Pecan; Zone 7.
Pistache, Chinese; Zone 8.
Redbud, Eastern; Zone 6.
Retama; Zone 9.
Sassafras; Zone 5.
Soapberry, Western; Zone 6.
Sycamore; Zone 5.
Zelkova; Zone 5.

Palms

Palm, Washington (Palm, Mexican Fan); Zone 9.

REGION 6

Evergreens, broadleaf

Olive, Common; Zone 9.
Olive, Russian; Zone 5.

Evergreens, needle leaf and scale leaf

Arborvitae, Giant; Zone 6.
Arborvitae, Oriental; Zone 3.
Cedar, Atlas; Zone 6.

Cedar, Eastern Red (Juniper); Zone 2.
Cedar, Incense; Zone 6.
Douglas Fur; Zone 3.
Fir, White; Zone 5.
Juniper, Rocky Mountain; Zone 3.
Pine, Austrian; Zone 3.
Pine, Ponderosa; Zone 3.
Spruce, Colorado Blue; Zone 2.

Deciduous

Ash, European; Zone 3.
Ash, Green; Zone 2.
Ash, Modesto (Ash, Arizona); Zone 7.
Beech, European; Zone 5.
Buckeye; Zone 4.
Catalpa, Northern; Zone 3.
Cottonwood, Plains (Poplar, Plains); Zone 3.
Elm, American; Zone 3.
Elm, Chinese; Zone 5.
Elm, European; Zone 5.
Elm, Siberian; Zone 3.
Ginkgo; Zone 5.
Goldenrain Tree; Zone 5.
Hackberry, Eastern; Zone 3.
Honeylocust, Thornless; Zone 3.
Horsechestnut; Zone 3.
Horsechestnut, Red (Buckeye, Red and Horsechestnut, Ruby); Zone 3.
Japanese Pagoda Tree; Zone 5.
Katsura Tree; Zone 5.
Kentucky Coffeetree; Zone 5.
Linden, American; Zone 3.
Linden, Littleleaf; Zone 3.
London Plane; Zone 6.
Maple, Bigleaf; Zone 8.
Maple, Norway; Zone 4.
Maple, Sugar; Zone 3.
Mulberry, Russian; Zone 5.
Oak, Bur; Zone 3.
Oak, Northern Red; Zone 4.
Oak, Pin; Zone 4.
Oak, White; Zone 5.
Sweetgum; Zone 5.
Zelkova; Zone 5.

REGION 7

Evergreens, broadleaf

Carob; Zone 9.
Eucalyptus (Gum); Zone 10.
Olive, Common; Zone 9.
Olive, Russian; Zone 5.
Palo Verde, Blue; Zone 7.

Evergreens, needle leaf and scale leaf

Cedar, Atlas; Zone 6.
Cedar, Deodar; Zone 7.
Cedar, Eastern Red (Juniper); Zone 2.
Cypress, Arizona; Zone 7.
Cypress, Italian; Zone 7.
Douglas Fur; Zone 3.
Fir, Silver; Zone 5.
Juniper, Rocky Mountain; Zone 3.
Pine, Aleppo; Zone 9.
Pine, Austrian; Zone 3.
Pine, Canary Island; Zone 8.

Deciduous

Acacia, Baileys (Baileys Wattle); Zone 9.
Ailanthus (Tree of Heaven); Zone 5.
Ash, Green; Zone 2.
Ash, Modesto (Ash, Arizona); Zone 7.
Chinaberry (Umbrella Tree); Zone 7.
Cottonwood, Fremont; Zone 5.
Cottonwood, Plains (Poplar, Plains); Zone 3.
Desert Willow; Zone 7.

Elm, Chinese; Zone 5.
Elm, Siberian; Zone 3.
Ginkgo; Zone 5.
Goldenrain Tree; Zone 5.
Hackberry, Eastern; Zone 3.
Hackberry, Western (Sugarberry); Zone 5.
Honeylocust, Thornless; Zone 3.
Huisache; Zone 9.
Linden, Littleleaf; Zone 3.
Locust, Black; Zone 3.
London Plane; Zone 6.
Maple, Silver; Zone 3.
Mesquite; Zone 9.
Mulberry, Russian; Zone 5.
Oak, Pin; Zone 4.
Oak, Southern Red; Zone 7.
Pecan; Zone 7.
Pistache, Chinese; Zone 8.
Poplar, Bolleana; Zone 5.
Poplar, Carolina; Zone 5.
Sweetgum; Zone 5.
Wattle, Sydney; Zone 10.

Palms

Palm, Canary Date; Zone 9.

REGION 8

Evergreens, broadleaf

Cajeput; Zone 10.
Camphor Tree; Zone 9.
Carob; Zone 9.
Cherry, Australian Brush; Zone 8.
Coral Tree; Zone 10.
Eucalyptus (Gum); Zone 10.
Fig, India Laurel; Zone 10.
Fig, Moreton Bay; Zone 10.
Jacaranda; Zone 9.
Laurel, California; Zone 7.
Laurelcherry; Zone 7.
Laurel, Grecian; Zone 6.
Magnolia, Southern; Zone 7.
Oak, Canyon Live; Zone 7.
Oak, Coast Live; Zone 9.
Oak, Holly; Zone 9.
Oak, Live; Zone 8.
Palo Verde, Blue; Zone 7.
Tanoak; Zone 8.

Evergreens, needle leaf and scale leaf

Arborvitae, Oriental; Zone 3
Cedar, Atlas; Zone 6.
Cedar, Deodar; Zone 7.
Cedar, Incense; Zone 6.
Cedar of Lebanon; Zone 6.
Cryptomeria; Zone 6.
Cypress, Arizona; Zone 7.
Lawson False Cypress; Zone 6.
Norfolk Island Pine; Zone 10.
Pine, Aleppo; Zone 9.
Pine, Canary Island; Zone 8.
Spruce, Colorado Blue; Zone 2.

Deciduous

Ash, Modesto (Ash, Arizona); Zone 7.
Chinaberry (Umbrella Tree); Zone 7.
Chinese Lantern Tree; Zone 6.
Cottonwood, Fremont; Zone 5.
Desert Willow; Zone 7.
Elm, American; Zone 3.
Elm, Chinese; Zone 5.
Elm, Siberian; Zone 3.
Ginkgo; Zone 5.
Goldenrain Tree; Zone 5.
Hackberry, Eastern; Zone 3.
Honeylocust, Thornless; Zone 3.
Japanese Pagoda Tree; Zone 5.
Locust, Black; Zone 3.
London Plane; Zone 6.
Maple, Bigleaf; Zone 8.

Maple, Norway; Zone 4.
Maple, Red; Zone 3.
Mimosa; Zone 7.
Mulberry, Russian; Zone 5.
Oak, Bur; Zone 3.
Oak, English; Zone 5.
Oak, Northern Red; Zone 4.
Oak, Pin; Zone 4.
Oak, Scarlet; Zone 4.
Oak, Valley; Zone 9.
Orchid Tree; Zone 9.
Pistache, Chinese; Zone 8.
Sweetgum; Zone 5.
Tulip Poplar; Zone 5.

Palms

Palm, Canary Date; Zone 9.
Palm, Washington (Palm, Mexican Fan); Zone 9.

Leafless

Casuarina (Beefwood, Horsetail); Zone 10.

REGION 9

Evergreens, broadleaf

Holly, English; Zone 7.
Madrone; Zone 7.
Magnolia, Southern; Zone 7.
Tanoak; Zone 8.

Evergreens, needle leaf and scale leaf

Arborvitae, Giant; Zone 6.
Arborvitae, Oriental; Zone 3.
Cedar, Atlas; Zone 3.
Cedar, Deodar; Zone 7.
Cedar, Incense; Zone 6.
Cryptomeria; Zone 6.
Lawson False Cypress; Zone 6.
Pine, Austrian; Zone 3.
Pine, Ponderosa; Zone 3.
Spruce, Colorado Blue; Zone 2.

Deciduous

Ash, European; Zone 3.
Ash, Green; Zone 2.
Ash, White; Zone 3.
Beech, European; Zone 5.
Birch, White; Zone 2.
Cork Tree, Phelledendron Amur; Zone 4.
Dogwood, Pacific; Zone 7.
Elm, American; Zone 3.
Elm, Chinese; Zone 5.
Elm, English; Zone 6.
Elm, Scotch; Zone 5.
Elm, Siberian; Zone 3.
Ginkgo; Zone 5.
Golden Chain Tree; Zone 7.
Goldenrain Tree; Zone 5.
Honeylocust, Thornless; Zone 3.
Hornbeam, American; Zone 3.
Horsechestnut; Zone 3.
Horsechestnut, Red (Buckeye, Red and Horsechestnut, Ruby); Zone 3.
Japanese Pagoda Tree; Zone 5.
Kentucky Coffeetree; Zone 5.
Linden, American; Zone 3.
Linden, Littleleaf; Zone 3.
London Plane; Zone 6.
Maple, Bigleaf; Zone 8.
Maple, Norway; Zone 4.
Maple, Red; Zone 3.
Maple, Sugar; Zone 3.
Mimosa; Zone 7.
Oak, Northern Red; Zone 4.
Oak, Oregon White; Zone 6.
Oak, Pin; Zone 4.
Oak, Scarlet; Zone 4.
Oak, White; Zone 5.
Silverbell; Zone 5.
Sourwood; Zone 7.
Sweetgum; Zone 5.
Tulip Poplar; Zone 5.
Yellowwood; Zone 4.

For more detailed information on shade trees, see Agriculture Handbook 425, "Shade Trees for the Home," which is available at 75¢ per copy from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402. Include your ZIP Code in your return address.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973—491-288